

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

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Hideo TANAYA

Application No.: New US Patent Application

Filed: March 9, 2001

Docket No.: 108850

For: PACKAGE SEALING METHOD, MANUFACTURING METHOD OF ELECTRONIC
DEVICE MODULES, SEALING APPARATUS, AND PACKAGE PRODUCTS

PRELIMINARY AMENDMENT

Director of the U.S. Patent and Trademark Office
Washington, D. C. 20231

Sir:

Prior to initial examination, please amend the above-identified application as follows:

IN THE CLAIMS:

Please replace claims 3-4, 7-8, 10-12, and 18-22 as follows:

3. (Amended) The package sealing method according to claim 1, wherein the case and the lid are fixed to each other by pressure, and thereafter, the bonding member is irradiated with the laser beam.

4. (Amended) The package sealing method according to claim 1, wherein the case is provided with a through hole, and the case and the lid are fixed to each other by vacuum suction using the hole, and thereafter, the bonding member is irradiated with the laser beam.

7. (Amended) The package sealing method according to claim 1, wherein the laser beam is scanned, to irradiate the bonding member point by point so that the case and the lid are welded together.

8. (Amended) The package sealing method according to claim 1, wherein the laser beam is projected through a phase hologram to generate a diffraction light pattern with which the bonding member is irradiated at a time as a whole, so that the case and the lid are welded together.

10. (Amended) The package sealing method according to claim 8, wherein the laser beam is converged by a condensing lens, the phase hologram is arranged between the condensing lens and the lid, and further, a position of the phase hologram is varied in an optical axis direction so that the diffraction light pattern can be obtained at a desired location with desired dimensions.

11. (Amended) The package sealing method according to claim 1, wherein a temperature distribution over a welding portion of the case and the lid is monitored during the laser irradiation of the bonding member.

12. (Amended) The package sealing method according to claim 1, wherein the bonding member is preheated before irradiated with the laser beam.

18. (Amended) The sealing apparatus according to claim 14, which further includes a laser scanner for scanning a laser beam to irradiate the bonding member point by point.

19. (Amended) The sealing apparatus according to claim 14, which further includes a phase hologram for forming a diffraction light pattern of the laser beam with which the bonding member is irradiated at a time as a whole.

20. (Amended) The sealing apparatus according to claim 14, which further includes a temperature monitor for monitoring a temperature distribution over a welding portion of the case and the lid during the laser irradiation of the bonding member.

21. (Amended) The sealing apparatus according to claim 14, which further includes a heater for preheating the bonding member.

22. (Amended) A packaged product manufactured by the method according to claim 1.

REMARKS

Claims 1-22 are pending. Claims 3-4, 7-8, 10-12, and 18-22 are amended to eliminate multiple dependencies. Prompt and favorable consideration on the merits is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. 1.121(c)(ii)).

Respectfully submitted,


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JAO:JSA/zmc
Attachment: APPENDIX
Date: March 9, 2001

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APPENDIX

Changes to Claims:

The following are marked-up versions of the amended claims:

3. (Amended) The package sealing method according to ~~any one of claim 1 or 2~~, wherein the case and the lid are fixed to each other by pressure, and thereafter, the bonding member is irradiated with the laser beam.
4. (Amended) The package sealing method according to ~~any one of claim 1 or 2~~, wherein the case is provided with a through hole, and the case and the lid are fixed to each other by vacuum suction using the hole, and thereafter, the bonding member is irradiated with the laser beam.
7. (Amended) The package sealing method according to ~~any one of claims 1 to 6~~, wherein the laser beam is scanned, to irradiate the bonding member point by point so that the case and the lid are welded together.
8. (Amended) The package sealing method according to ~~any one of claims 1 to 6~~, wherein the laser beam is projected through a phase hologram to generate a diffraction light pattern with which the bonding member is irradiated at a time as a whole, so that the case and the lid are welded together.
10. (Amended) The package sealing method according to claim ~~8 or 9~~, wherein the laser beam is converged by a condensing lens, the phase hologram is arranged between the condensing lens and the lid, and further, a position of the phase hologram is varied in an optical axis direction so that the diffraction light pattern can be obtained at a desired location with desired dimensions.

11. (Amended) The package sealing method according to ~~any one of~~ claims 1 to 10, wherein a temperature distribution over a welding portion of the case and the lid is monitored during the laser irradiation of the bonding member.

12. (Amended) The package sealing method according to ~~any one of~~ claims 1 to 14, wherein the bonding member is preheated before irradiated with the laser beam.

18. (Amended) The sealing apparatus according to ~~any one of~~ claims 14 to 17, which further includes a laser scanner for scanning a laser beam to irradiate the bonding member point by point.

19. (Amended) The sealing apparatus according to ~~any one of~~ claims 14 to 17, which further includes a phase hologram for forming a diffraction light pattern of the laser beam with which the bonding member is irradiated at a time as a whole.

20. (Amended) The sealing apparatus according to ~~any one of~~ claims 14 to 19, which further includes a temperature monitor for monitoring a temperature distribution over a welding portion of the case and the lid during the laser irradiation of the bonding member.

21. (Amended) The sealing apparatus according to ~~any one of~~ claims 14 to 20, which further includes a heater for preheating the bonding member.

22. (Amended) A packaged product manufactured by the method according to ~~any one of~~ claims 1 to 13.